CURLEY CREEK WATER ASSOCIATION (PWS# 1110008)
SOURCE WATER ASSESSMENT REPORT

March 26, 2003

State of Idaho
Department of Environmental Quality

Executive Summary

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the act. This risk assessment is based on a land use inventory in the well recharge zone, sensitivity factors associated with how the well was constructed, and aquifer characteristics.

This report, *Source Water Assessment for Curley Creek Water Association*, describes the public drinking water sources; the recharge zones and potential contaminant sites located inside the recharge zone boundaries. This assessment, taken into account with local knowledge and concerns, should be used as a planning tool to develop and implement appropriate protection measures for this public water system. **The results should <u>not be</u> used as an absolute measure of risk and they should <u>not be</u> used to undermine public confidence in the water system.**

The Curley Creek Water Association operates a community water system serving 36 residents in rural Boundary County about 5 miles east of Moyie Springs, Idaho (Figure 1). The association has recently drilled a new well to replace a failing spring source and deep well just west of Curley Creek.

The springs are subject to surface water influence and are susceptible to naturally occurring microbial contamination. Susceptibility to other classes of regulated contaminants is low because the watershed above the intake is mostly undeveloped forest. Well #1, adjacent to the spring, and the new source, Well #2, automatically ranked highly susceptible to inorganic chemical contamination in an analysis the Idaho Department of Environmental Quality conducted February 11, 2003. Arsenic concentrations in samples from both wells exceed primary drinking water standards. Well #1 is moderately susceptible to organic chemical and microbial contamination mostly because of risk factors related to well site geology. Well #2 is at low risk relative to organic chemical and microbial contaminants.

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses that require education and surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

Source Water Assessment for Curley Creek Water Association

Section 1. Introduction - Basis for Assessment

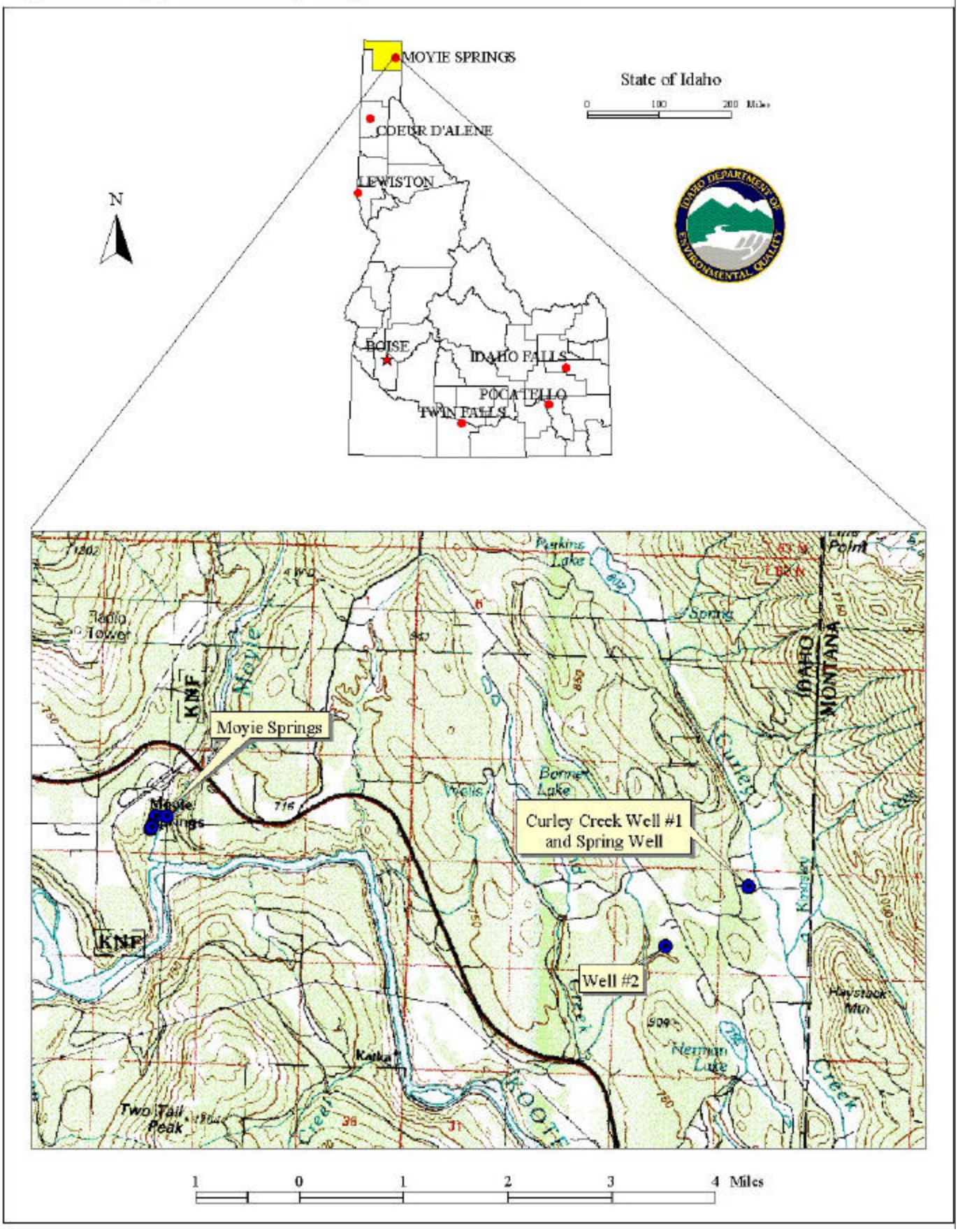
The following sections contain information necessary for understanding how and why this assessment was conducted. **It is important to review this information to understand what the ranking of this source means.** Maps showing the delineated source water assessment area and an inventory of significant potential sources of contamination identified within that area are included. The Susceptibility Analysis Worksheets used to develop this assessment are attached.

Level of Accuracy and Purpose of the Assessment

The Idaho Department of Environmental Quality (DEQ) is required by the U.S. Environmental Protection Agency (EPA) to assess every public drinking water source in Idaho for its relative susceptibility to contaminants regulated by the Safe Drinking Water Act. These assessments are based on a land use inventory inside the delineated recharge zones, sensitivity factors associated with how the well is constructed, and aquifer characteristics. The state must complete more than 2900 assessments by May of 2003. Because resources and the time available to accomplish assessments are limited, an in-depth, site-specific investigation for every public water system is not possible.

The results of the source water assessment should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the water system. The ultimate goal of this assessment is to provide data to local communities for developing a protection strategy for their drinking water supply. The Idaho Department of Environmental Quality recognizes that pollution prevention activities generally require less time and money to implement than treating a public water supply system once it has been contaminated. DEQ encourages communities to balance resource protection with economic growth and development. The decision as to the amount and types of information necessary to develop a source water protection program should be determined by the local community based on its own needs and limitations. Wellhead or source water protection is one facet of a comprehensive growth plan, and it can complement ongoing local planning efforts.

Figure 1. Geographic Location of Curley Creek Water Association



Section 2. Preparing for the Assessment

Defining the Zones of Contribution - Delineation

The delineation process establishes the physical area around a well or surface water intake that will become the focal point of the assessment and protection efforts. For wells, the process includes mapping the boundaries of the well recharge area into time of travel (TOT) zones indicating the number of years necessary for a particle of water flowing through the aquifer to reach a well. To protect surface water sources from potential contaminants, the EPA required that the entire drainage basin be delineated upstream from the intake to the hydrologic boundary of the drainage basin (U.S. EPA, 1997b).

The Curley Creek Water Association Spring Well was delineated as a surface water source. The recharge area was drawn on a 7.5 minute U.S. Geological Survey Map by tracing the ridgelines that define the basin above the intake structure. The delineation encloses about 354 acres (Figure 2).

Two ground water sources were delineated for Curley Creek Water Association, a deep older well near the Spring Well and a new well about a mile southwest of the older sources. Well logs were available for both wells and a short-duration step-drawdown pump test was available for the new well. The new well is 120 feet deep and completed in a fractured shale zone. The old well is 460 feet deep, and is also completed in fractured meta-sediments. The pumping volume (3690 ft^3/day) was estimated from a population served of 115.

Based on well log information the saturated thickness for the deep well was assumed to be 300 feet. A gradient of 0.1, based on the steep mountain terrain in the vicinity of the well, was used. Hydraulic conductivity estimates for three wells in the vicinity were 0.14, 0.16, and 9 feet/day and a value of 1 ft/day was used. Most wells in the area appear to be low yielding with pumping rates of 1 to 5 gallons/minute with associated large drawdown.

Based on these assumptions the lengths of the 0-3, 3-6 and 6-10 year time of travel zones are 1175, 2300, and 3800 feet respectively. Because of the mountainous terrain, confined nature of the groundwater system, deep completion, and uncertainty regarding the direction of ground water flow for the deep well the time of travel zones were rotated. The resulting delineation (Figure 3) ranges from northwest to southeast, with the assumption being the ground water system is moving toward the Kootenai River as a discharge location. It is also likely that recharge of the deep well groundwater system occurs in scattered fractures which outcrop at the surface at great distance from the well. Little information is available to delineate these areas with much certainty.

Using information from the step-drawdown pumping test and associated recovery measurements, the hydraulic conductivity in the vicinity of the new well was estimated at 10 feet/day. The hydraulic gradient of 0.018 was estimated between the municipal well and the Bill

Lawrence well which is located in the SW ¼ of the NW ¼ of section 28, just to the southwest and downgradient (toward the Kootenai river) of the Curley Creek Well #2. A porosity of 0.15 was used, reflecting a more fractured condition at the top of the metasediments than at depth.

Based on these assumptions the lengths of the 3, 6 and 10 year TOT for the new well were estimated to be 1550, 2900, and 4700 feet, respectively. The final capture zone for the new well was restricted primarily to the valley bottom due to the much shallower completion and the possibility of recharge from the surface. Figure 4 illustrates the capture zones for this well.

Identifying Potential Sources of Contamination

The goal of the inventory process is to locate and describe those facilities, land uses, and environmental conditions that are potential sources of water contamination. Inventories for all public water systems in Idaho were conducted in two-phases. The first phase involved identifying and documenting potential contaminant sources within a system's source water assessment area through the use of computer databases and Geographic Information System maps developed by DEQ. Maps showing the delineations and tables summarizing the results of the database search were then sent to system operators for review and correction during the second or enhanced phase of the inventory process.

Many potential sources of contamination are regulated at the federal level, state level, or both to reduce the risk of release. When a business, facility, or property is identified as a potential contaminant source, this should not be interpreted to mean that this business, facility, or property is in violation of any local, state, or federal environmental law or regulation. What it does mean is that the potential for contamination exists due to the nature of the business, industry, or operation.

Section 3. Susceptibility Analysis

The susceptibility to contamination of all water sources in Idaho is being assessed on the following factors:

- physical integrity of the well or surface water intake,
- hydrologic characteristics of ground water sources,
- land use characteristics, and potentially significant contaminant sources
- historic water quality

The susceptibility rankings are specific to a particular potential contaminant or category of contaminants. A high susceptibility rating relative to one potential contaminant does not mean that the water system is at the same risk for all other potential contaminants. The relative ranking that is derived for each well is a qualitative, screening-level step that, in many cases, uses generalized assumptions and best professional judgement. The following summaries describe the rationale for the susceptibility ranking. Susceptibility analysis worksheets for Curley Creek Water Association in Attachment A show in detail how the sources were scored.

System Construction

Spring Well. Because of the shallow depth of the Spring Well and the way it was constructed it was analyzed as surface water. Sanitary surveys provided information for this portion of the susceptibility analysis.

The spring was redeveloped in 1969 by sinking a 3-foot diameter metal culvert into a crib filled with coarse gravel. Estimates of the culvert's depth vary from 10 to 15 feet. The upper end of the culvert extends about 1.5 feet above ground and is covered with a fitted wooden lid. The structure is located inside a pump house. While the spring is protected from debris and animals, testing has shown that it is surface water influenced. The spring typically dries up in late summer.

Well#1. Construction factors directly affect the ability of a well to protect the aquifer from contaminants. Lower scores imply a well that can better protect the water. This portion of the susceptibility analysis relies on information from individual well logs and from the most recent sanitary survey of the public water system. No maintenance deficiencies were noted at the wellhead during a sanitary inspection in November 2002.

Well #1, located about 100 feet north of the Spring Well, was drilled in January 1994 to a total depth of 460 feet. The casing is 225 feet deep, extending from 2 feet above ground through 21 feet of unconsolidated material and into the underlying shale formation. A 4-inch PVC liner extends from 160 to 459 feet below the surface. The surface seal is 19 feet deep, terminating in a stratum of sand, gravel and boulders. Current Idaho Department of Water Resources well construction standards require the surface seal to extend into an impervious sedimentary bed or the rock formation above the water-bearing zone. The standards also specify a minimum wall thickness of 0.322 inches for 8-inch steel casing. The casing wall thickness in this well is 0.250 inches.

The static water level in Well #1 is 30 feet below land surface, with the highest production, 11 gallons per minute at the time of drilling, coming from fractured seams 184 to 380 feet below ground. The well is above the Curley Creek flood plain and pumps ground water without surface water influence. The capacity of this well has decreased to an estimated flow of 3 to 4 gallons per minute.

Well #2. With the older sources failing to supply enough water, Curley Creek Water Association commissioned a hydrogeologic reconnaissance study in 2001 to find a new well site. Hoping to find a high volume /high quality water in a glacial deposits, the association drilled Well #2 in an area where the shale bedrock is covered with 70 feet of silt instead of coarse glacial outwash found in a nearby well. The 6-inch steel casing extends from 2 feet above grade a depth of 79 feet, terminating in a water-bearing stratum of broken shale. The 20 feet deep surface seal is completed in stratum of dry brown/tan silt. Static water level in the well is 32 feet below ground. The well will become the primary source for the system when construction is completed in the spring of 2003.

Hydrologic Sensitivity

The susceptibility analyses for ground water sources includes assignment of hydrologic sensitivity scores that reflect natural geologic conditions at the well site and in the recharge zone. Information for this part of the analysis is derived from individual well logs and from the soil drainage classification inside the delineation boundaries. The Curley Creek Water Association Well #1 scored 5 points out of 6 points possible in this portion of the susceptibility analysis. Well #2 scored 3 points.

In recharge zone for Well #1, the soils are classified as moderately well to well drained. Soils that drain rapidly are deemed less protective of ground water than slowly draining soils. At the well site, 4 feet of topsoil mixed with gravel, then 17 feet of sand, gravel and boulders cover the underlying shale formation. The well log shows first water 160 feet below ground in a shale stratum that produced about 1 gallon per minute. The most productive level, up to 10 gallons per minute, was in seams in shale from 184 to 380 feet below the surface.

In the recharge zone for Well #2 moderately well to well drained soils predominate in the 3-6 and 6-10 year time of travel zones. Poorly drained soils cover about 55 per cent of the 0-3 year time of travel zone. At the well site 70 feet of silt forms an aquitard protecting the groundwater from vertical transport of contaminants. A layer of broken shale lying 70 to 80 feet below the surface produced 60 gallons per minute when air tested at the time of drilling.

Potential Contaminant Sources and Land Use.

Undeveloped forest characterizes most of the small watershed delineated for the spring. Land in the creek bottom was historically farmed, but most of the area east of the pump house is being restored as wetland. The wetland also covers a significant portion of the recharge zone delineated for Well #1. Agricultural land covers about a third of the zone of contribution delineated for Well #2. Most of the remaining area is wooded with scattered homes. Roads in the area carry low volume local traffic.

Figure 2. Curley Creek Water Association Spring Well Delineation and Potential Contaminant Inventory.

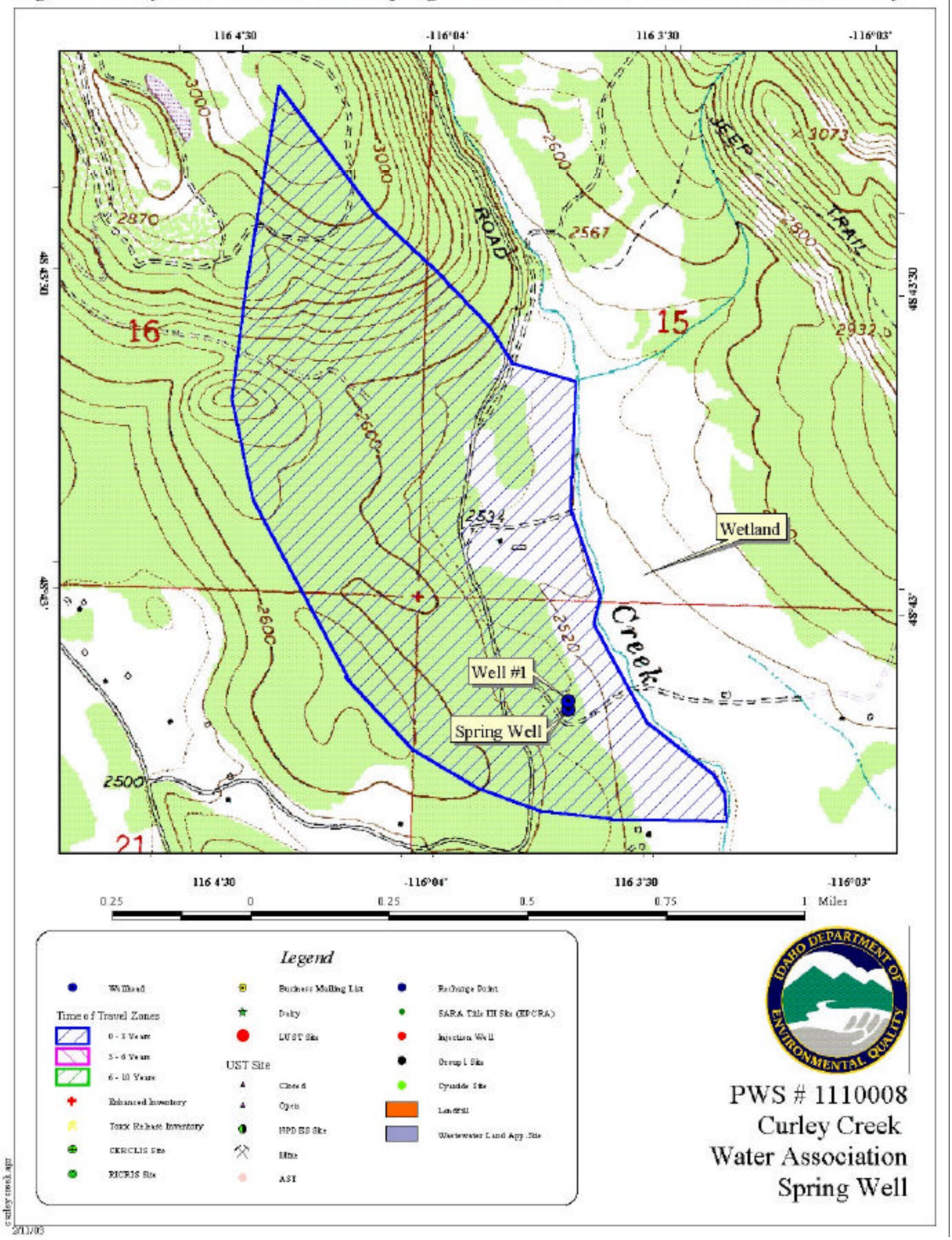


Figure 3. Curley Creek Water Association Well #1 Delineation and Potential Contaminant Inventory.

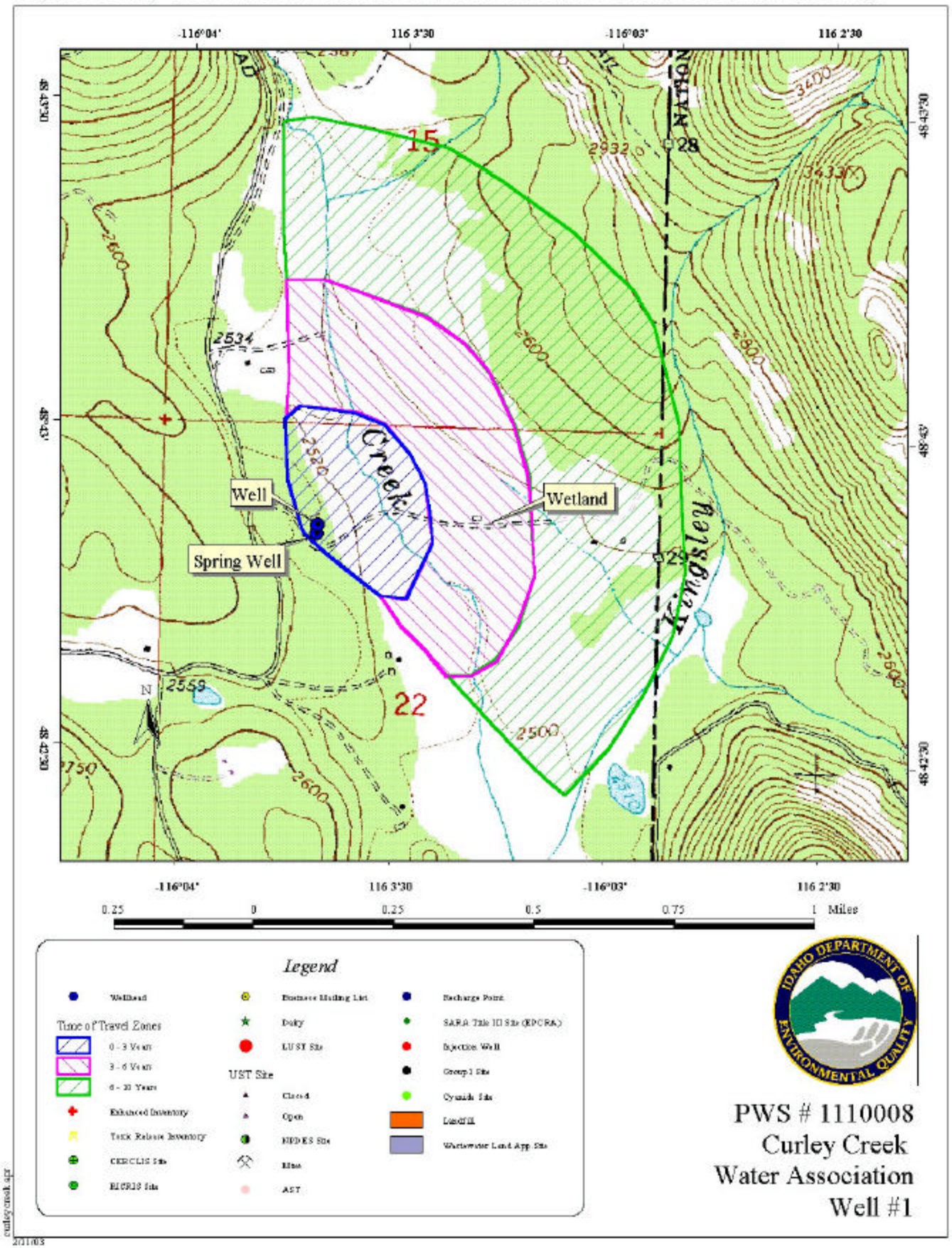
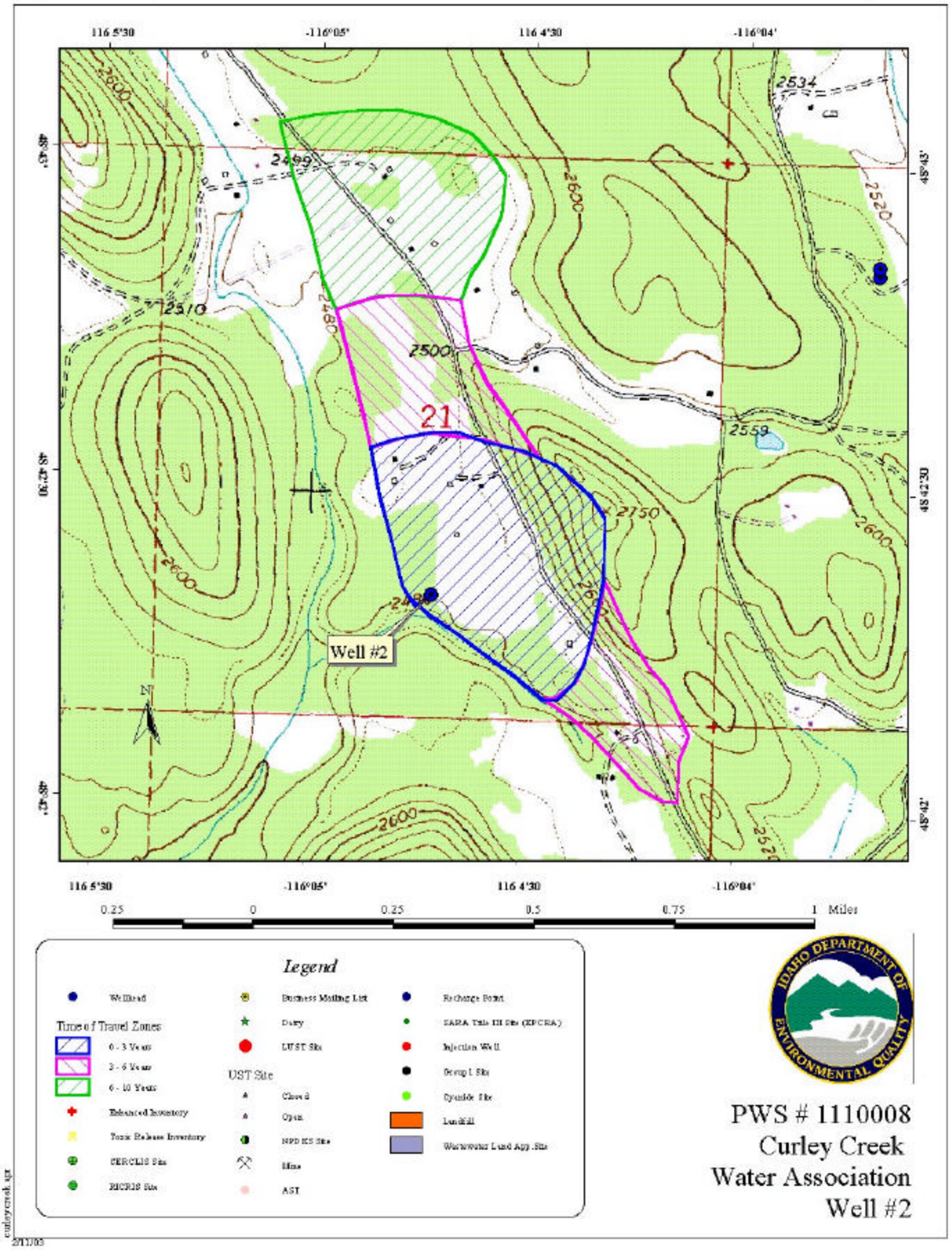


Figure 4. Curley Creek Water Association Well #2 Delineation and Potential Contaminant Inventory.



Historic Water Quality

The Curley Creek Water Association spring well has had few water quality problems other than naturally occurring microbial contamination. Filtration and chlorination purify the spring water before it enters the distribution system. The trihalomethanes detected in the water in February 1994 are by products of disinfection. Water from the spring well and Well #1 is manifolded when both sources are in use. Test results on Table 1 are from the pumphouse sampling point. Double entries for arsenic, nitrate, sodium and fluoride show changes following construction of Well #1. Table 2 summarizes sampling results for Well #2. Water from Wells #1 and #2 has arsenic concentrations from natural deposits that exceed the Maximum Contaminant Level. Iron concentrations are also elevated in Well #2. The system plans to install arsenic and iron removal equipment during the final development phase for Well #2.

Table 1. Curley Creek Water Association Test Results: Spring Well and Well #1

Primary IOC Contaminants (Mandatory Tests)							
Contaminant	MCL (mg/l)	Results (mg/l)	Dates	Contaminant	MCL (mg/l)	Results (mg/l)	Dates
Antimony	0.006	ND	2/2/94, 12/7/98, 10/10/01	Nitrate	10	ND	11/19/97 through 10/24/02
Arsenic	0.01	ND	11/5/81 through 4/5/88	Nitrate	10	0.19 to 0.508	2/8/82 through 2/2/94
Arsenic	0.01	0.018 to 0.023	2/2/94 through 10/10/01	Nickel	N/A	ND	2/2/94, 12/7/98, 10/10/01
Barium	2.0	ND to 0.07	11/5/81 through 10/1/01	Selenium	0.05	ND	11/5/81 through 10/1/01
Beryllium	0.004	ND	2/2/94, 12/7/98, 10/10/01	Sodium	N/A	2.7 to 5.1	11/5/81 through 4/5/88
				Sodium		23.0 to 37.2	2/2/94 through 10/10/01
Cadmium	0.005	ND	11/5/81 through 10/1/01	Thallium	0.002	ND	2/2/94, 12/7/98, 10/10/01
Chromium	0.1	ND	11/5/81 through 10/1/01	Cyanide	0.02	ND	2/2/94
Mercury	0.002	ND	11/5/81 through 10/1/01	Fluoride	4.0	ND	11/5/81 through 4/5/88
				Fluoride	4.0	0.08 to 0.5	2/2/94 through 10/10/01

Regulated and Unregulated Synthetic Organic Chemicals		
Contaminant	Results	Dates
29 Regulated and 13 Unregulated Synthetic Organic Compounds	None Detected	2/2/94, 12/7/98, 10/10/01

Regulated and Unregulated Volatile Organic Chemicals		
Contaminant	Results	Dates
21 Regulated And 16 Unregulated Volatile Organic Compounds	None Detected except as noted below	2/2/94, 12/7/98
Total Trihalomethanes (MCL = 100 µg/l)	4 µg/l	2/2/94

Table 1. Curley Creek Water Association Test Results: Spring Well and Well #1

Radiological Contaminants			
Contaminant	MCL	Results	Dates
Gross Alpha, Including Ra & U	15 pCi/l	Pumphouse--0.9, 6.0 pCi/l	8/27/79, 9/11/95
Gross Alpha, Including Ra & U	15 pCi/l	Distribution--19.6, 7.0 pCi/l	2/2/94, 11/17/99
Gross Beta Particle Activity	4 mrem/year	Pumphouse--1.6, 7.0 mrem	8/27/79, 9/11/95
Gross Beta Particle Activity	4 mrem/year	Distribution--3.5, 6.2 mrem	2/2/94, 11/17/99

Table 2. Curley Creek Water Association Test Results: Well #2

Primary IOC Contaminants (Mandatory Tests)							
Contaminant	MCL (mg/l)	Results (mg/l)	Dates	Contaminant	MCL (mg/l)	Results (mg/l)	Dates
Antimony	0.006	ND	10/1/02	Nitrate	10	ND	10/30/02
Arsenic	0.01	0.033, 0.028	10/1/02 10/30/02	Nickel	N/A	ND	10/1/02
Barium	2.0	ND	10/1/02	Selenium	0.05	ND	10/1/02
Beryllium	0.004	ND	10/1/02	Sodium	N/A		No results
Cadmium	0.005	ND	10/1/02	Thallium	0.002	ND	10/1/02
Chromium	0.1	ND	10/1/02	Cyanide	0.02	ND	10/30/02
Mercury	0.002	ND	10/1/02	Fluoride	4.0	0.1	10/30/02

Secondary and Other IOC Contaminants (Optional Tests)			
Contaminant	Recommended Maximum (mg/l)	Results	Dates
Sulfate		9.1 mg/l	10/30/02
Iron		0.8, 1.7 mg/l	10/1/02, 10/30/02

Regulated and Unregulated Synthetic Organic Chemicals		
Contaminant	Results	Dates
29 Regulated and 13 Unregulated Synthetic Organic Compounds	None Detected	10/30/02

Regulated and Unregulated Volatile Organic Chemicals		
Contaminant	Results	Dates
21 Regulated And 16 Unregulated Volatile Organic Compounds	None Detected	10/30/02

Radiological Contaminants			
Contaminant	MCL	Results	Dates
Gross Alpha, Including Ra & U	15 pCi/l	1.4 pCi/l	11/1/02
Gross Beta Particle Activity	50pCi/l	7.1 pCi/l	11/1/02

Final Susceptibility Ranking

The Curley Creek Water Association spring, like all surface water influenced sources, is highly susceptible to microbial contamination. With the watershed above the intake mostly undeveloped, the risk of the spring becoming contaminated with other classes of regulated contaminants is low.

Well #1 and Well #2 automatically ranked highly susceptible to inorganic chemical contamination because concentrations of arsenic in the tested well water exceed the new Maximum Contaminant Level. Well #2 also has elevated iron levels.

Well #1 is moderately susceptible to synthetic and volatile organic chemical and microbial contaminants, mostly because of risk factors associated with well site geology. Well #2 is at low risk relative to synthetic and volatile organic chemical and microbial contaminants. Totals for system construction and hydrologic sensitivity along with the cumulative scores for land use and potential contaminant sites are shown on Table 3. Complete susceptibility analysis worksheets for the Curley Creek water sources are in Attachment A.

For surface water sources, the final susceptibility score is the sum of the source construction score and the potential contaminant/land use score. The susceptibility ranking is low for sources with final scores from 0 to 7; moderate for sources scoring 8 to 15 points; and high when scores range from 16 to 21.

The final scores for ground water sources are determined using the following formulas:

1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.2)
2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.35)

The final ranking categories are as follows:

- 0 - 5 Low Susceptibility
- 6 - 12 Moderate Susceptibility
- > 13 High Susceptibility

Table 3. Summary of Curley Creek Water Association Susceptibility Evaluation

Cumulative Susceptibility Scores						
Source Name	System Construction	Hydrologic Sensitivity	Contaminant Inventory			
			IOC	VOC	SOC	Microbial
Spring	1	NA	1	1	1	*High
Well #1	2	5	High	4	4	1
Well #2	1	3	High	2	2	2
Final Susceptibility Scores/Ranking						
	IOC	VOC	SOC	Microbial		
Spring	2/Low	2/Low	2/Low	*High		
Well #1	*High	7/Moderate	7/Moderate	7/Moderate		
Well #2	*High	4/Low	4/Low	5/Low		

*High bases on water sampling history
IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Section 4. Options for Source Water Protection

The susceptibility assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what the susceptibility ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses that require education and surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

If Curley Creek Water Association plans to keep the spring well as an active source, protection efforts should focus on retaining vegetative cover in the watershed. By stabilizing the soil, a healthy stand of trees reduces turbidity from surface runoff. A slower rate of runoff also facilitates ground water recharge. Watershed protection activities should be coordinated with public and private landowners in the watershed and agencies like the Department of Agriculture or the Natural Resource Conservation Service.

Restoration of the valley floor as a wetland should reduce the potential contaminant load from agricultural land use in the recharge zone for Well #1. Agricultural land use is the only significant potential contaminant source in the vicinity of Well #2. It may be useful to fence the well lot to ensure that applications of fertilizer pesticides and herbicides are kept at least 50 feet from the well head. The 2002 sanitary survey for Curley Creek also recommended installing a sloped concrete pad around the well head after the excavation work at the new well is completed and the casing re grouted.

A voluntary measure every system should implement is development of a water emergency response plan. There is a simple fill-in-the-blanks form available on the DEQ website to guide systems through the process. The DEQ website is also a source for back issues of the *Idaho Drinking Water Newsletter*. The special security issue published in 2001 provides useful information about protecting water systems through increased security measures.

Assistance

Public water suppliers and users may call the following IDEQ offices with questions about this assessment and to request assistance with developing and implementing a local protection plan. In addition, draft protection plans may be submitted to the IDEQ office for preliminary review and comments.

Idaho Department of Environmental Quality

Coeur d'Alene Regional IDEQ Office	(208) 769-1422
State IDEQ Office, Boise	(208) 373-0502
Website:	http://www.deq.state.id.us

Idaho Rural Water Association

Melinda Harper	(800) 962-3257
Website:	http://www.idahoruralwater.com

Idaho Association of Soil Conservation Districts

Water quality and soil conservation	(208) 338-5900
Website:	http://www.iascd.state.id.us/

References Cited

Great Lakes-Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers, 1997. "Recommended Standards for Water Works."

Haitjema, Henk. 2000. Time of Travel Capture Zone Delineations for Wellhead Protection. Prepared for Drinking Water Branch, Indiana Department of Environmental Management. Environmental Science Research Center, Indiana University, Bloomington, Indiana

Idaho Department of Agriculture, 1998. Unpublished Data.

Idaho Department of Environmental Quality, 1997. Design Standards for Public Drinking Water Systems. IDAPA 58.01.08.550.01.

Idaho Department of Water Resources, 1993. Administrative Rules of the Idaho Water Resource Board: Well Construction Standards Rules. IDAPA 37.03.09.

.

Attachment A

Curley Creek Water Association
Susceptibility Analysis Worksheets

Surface Water Susceptibility Report

Public Water System Name : **CURLEY CREEK WATER ASSN** Source: **SPRING #1**

Public Water System Number : **1110008**

2/11/03 10:40:23 AM

1. System Construction		**Score**
Intake structure prevents infiltration of surface water	NO	1
Infiltration gallery	YES	0
Total System Construction Score		**1**

2. Potential Contaminant Source / Land Use		**IOC Score**	**VOC Score**	**SOC Score**	**Microbial Score**
Predominant land use type (land use or cover)	UNDEVELOPED	0	0	0	0
Farm chemical use high	NO	0	0	0	
Significant contaminant sources *	YES MICROBIAL				
Sources of class II or III contaminants or microbials	present within the 500' of the intake and the 4	0	0	0	1
Agricultural lands within 500 feet	YES				
	Less than 25% Non-Irrigated Agriculture	0	0	0	0
Three or more contaminant sources	NO	0	0	0	0
Sources of turbidity in the watershed	YES	1	1	1	1
Total Potential Contaminant Source / Land Use Score		**1**	**1**	**1**	**3**
3. Final Susceptibility Source Score		**2**	**2**	**2**	**4**
4. Final Source Ranking		Low	Low	Low	*High

Ground Water Susceptibility

Public Water System Name : **CURLEY CREEK WATER ASSN** Source: **WELL #1**

Public Water System Number : **1110008** 2/11/03 8:49:46 AM

1. System Construction		SCORE			
Drill Date	1/24/94				
Driller Log Available	YES				
Sanitary Survey (if yes, indicate date of last survey)	YES 2002				
Well meets IDWR construction standards	NO	1			
Wellhead and surface seal maintained	YES	0			
Casing and annular seal extend to low permeability unit	CASING YES, SEAL NO	1			
Highest production 100 feet below static water level	YES	0			
Well located outside the 100 year flood plain	YES	0			
Total System Construction Score		**2**			
2. Hydrologic Sensitivity					
Soils are poorly to moderately drained	NO	2			
Vadose zone composed of gravel, fractured rock or unknown	NO	0			
Depth to first water > 300 feet	NO	1			
Aquitard present with > 50 feet cumulative thickness	NO	2			
Total Hydrologic Score		**5**			
3. Potential Contaminant / Land Use - ZONE 1A (Sanitary Setback)		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	WETLAND	1	1	1	1
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Zone 1A	YES	YES	NO	NO	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A		**1**	**1**	**1**	**1**
Potential Contaminant / Land Use - ZONE 1B (3 YR. TOT)					
Contaminant sources present (Number of Sources)	NO	0	0	0	0
(Score = # Sources X 2) 8 Points Maximum		0	0	0	0
Sources of Class II or III leacheable contaminants or Microbials	NO	0	0	0	
4 Points Maximum		0	0	0	
Zone 1B contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use Zone 1B	Less Than 25% Agricultural Land	0	0	0	0
Total Potential Contaminant Source / Land Use Score - Zone 1B		**0**	**0**	**0**	**0**
Potential Contaminant / Land Use - ZONE II (6 YR. TOT)					
Contaminant Sources Present	NO	0	0	0	
Sources of Class II or III leacheable contaminants or Microbials	NO	0	0	0	
Land Use Zone II	Less than 25% Agricultural Land	0	0	0	
Potential Contaminant Source / Land Use Score - Zone II		**0**	**0**	**0**	**0**
Potential Contaminant / Land Use - ZONE III (10 YR. TOT)					
Contaminant Source Present	NO	0	0	0	
Sources of Class II or III leacheable contaminants or Microbials	NO	0	0	0	
Do irrigated agricultural lands occupy > 50% of Zone	NO	0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone III		**0**	**0**	**0**	**0**
Cumulative Potential Contaminant / Land Use Score		**1**	**1**	**1**	**1**
4. Final Susceptibility Source Score		**7**	**7**	**7**	**7**
5. Final Well Ranking		High	Moderate	Moderate	Moderate

Ground Water Susceptibility

Public Water System Name : **CURLEY CREEK WATER ASSN** Source: **WELL #2**

Public Water System Number : **1110008** 2/11/03 10:36:03 AM

1. System Construction		SCORE			
Drill Date	10/1/02				
Driller Log Available	YES				
Sanitary Survey (if yes, indicate date of last survey)	YES 2002				
Well meets IDWR construction standards	YES	0			
Wellhead and surface seal maintained	YES	0			
Casing and annular seal extend to low permeability unit	YES	0			
Highest production 100 feet below static water level	NO	1			
Well located outside the 100 year flood plain	YES	0			
Total System Construction Score		**1**			
2. Hydrologic Sensitivity					
Soils are poorly to moderately drained	NO	2			
Vadose zone composed of gravel, fractured rock or unknown	NO	0			
Depth to first water > 300 feet	NO	1			
Aquitard present with > 50 feet cumulative thickness	YES	0			
Total Hydrologic Score		**3**			
3. Potential Contaminant / Land Use - ZONE 1A (Sanitary Setback)		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	DRYLAND AGRICULTURE	1	1	1	1
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Zone 1A	YES	YES	NO	NO	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A		**1**	**1**	**1**	**1**
Potential Contaminant / Land Use - ZONE 1B (3 YR. TOT)					
Contaminant sources present (Number of Sources)	NO	0	0	0	0
(Score = # Sources X 2) 8 Points Maximum		0	0	0	0
Sources of Class II or III leacheable contaminants or Microbials	NO	0	0	0	
4 Points Maximum		0	0	0	
Zone 1B contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use Zone 1B	25 to 50% Non-Irrigated Agricultural Land	1	1	1	1
Total Potential Contaminant Source / Land Use Score - Zone 1B		**1**	**1**	**1**	**1**
Potential Contaminant / Land Use - ZONE II (6 YR. TOT)					
Contaminant Sources Present	NO	0	0	0	
Sources of Class II or III leacheable contaminants or Microbials	NO	0	0	0	
Land Use Zone II	Less than 25% Agricultural Land	0	0	0	
Potential Contaminant Source / Land Use Score - Zone II		**0**	**0**	**0**	**0**
Potential Contaminant / Land Use - ZONE III (10 YR. TOT)					
Contaminant Source Present	NO	0	0	0	
Sources of Class II or III leacheable contaminants or Microbials	NO	0	0	0	
Do irrigated agricultural lands occupy > 50% of Zone	NO	0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone III		**0**	**0**	**0**	**0**
Cumulative Potential Contaminant / Land Use Score		**2**	**2**	**2**	**2**
4. Final Susceptibility Source Score		**4**	**4**	**4**	**5**
5. Final Well Ranking		High	Low	Low	Low

POTENTIAL CONTAMINANT INVENTORY
LIST OF ACRONYMS AND DEFINITIONS

AST (Aboveground Storage Tanks) – Sites with aboveground storage tanks.

Business Mailing List – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLIS – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as ? Superfund? is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands.)

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RICRIS – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.